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* * * * * Welcome to STN International * * * * *

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NEWS 2 Dec 17 The CA Lexicon available in the CAPLUS and CA files
NEWS 3 Feb 06 Engineering Information Encompass files have new names
NEWS 4 Feb 16 TOXLINE no longer being updated
NEWS 5 Apr 23 Search Derwent WPINDEX by chemical structure
NEWS 6 Apr 23 PRE-1967 REFERENCES NOW SEARCHABLE IN CAPLUS AND CA
NEWS 7 May 07 DGENE Reload
NEWS 8 Jun 20 Published patent applications (A1) are now in USPATFULL
NEWS 9 JUL 13 New SDI alert frequency now available in Derwent's
DWPI and DPCI

NEWS EXPRESS July 11 CURRENT WINDOWS VERSION IS V6.0b,
CURRENT MACINTOSH VERSION IS V5.0C (ENG) AND V5.0JB (JP),
AND CURRENT DISCOVER FILE IS DATED 06 APRIL 2001
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FILE 'HOME' ENTERED AT 16:22:22 ON 11 AUG 2001

=> file agricola caplus biosis

COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	0.15	0.15

FILE 'AGRICOLA' ENTERED AT 16:22:50 ON 11 AUG 2001

FILE 'CAPLUS' ENTERED AT 16:22:50 ON 11 AUG 2001

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FILE 'BIOSIS' ENTERED AT 16:22:50 ON 11 AUG 2001

=> s protoporphyrin or ppo

L1 14352 PROTOPORPHYRIN OR PPO

=> s l1 and herbicide and (resist? or tolera?)

L2 84 L1 AND HERBICIDE AND (RESIST? OR TOLERA?)

=> s l2 and alga?

L3 4 L2 AND ALGA?

=> dup rem l3

PROCESSING COMPLETED FOR L3

L4 2 DUP REM L3 (2 DUPLICATES REMOVED)

=> d 1-2 ti

L4 ANSWER 1 OF 2 CAPLUS COPYRIGHT 2001 ACS

TI Transgenic plants **tolerant** of herbicidal inhibitors of porphyrin biosynthesis

L4 ANSWER 2 OF 2 AGRICOLA

DUPLICATE 1

TI Isolation and characterization of a mutant protoporphyrinogen oxidase gene from Chlamydomonas reinhardtii conferring **resistance** to porphyric herbicides.

=> d 1-2 ti

L4 ANSWER 1 OF 2 CAPLUS COPYRIGHT 2001 ACS

TI Transgenic plants **tolerant** of herbicidal inhibitors of porphyrin biosynthesis

L4 ANSWER 2 OF 2 AGRICOLA

DUPLICATE 1

TI Isolation and characterization of a mutant protoporphyrinogen oxidase gene from Chlamydomonas reinhardtii conferring **resistance** to porphyric herbicides.

=> d pi

L4 ANSWER 1 OF 2 CAPLUS COPYRIGHT 2001 ACS

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 953646	A2	19991103	EP 1999-108463	19990430
	EP 953646	A3	20000906		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	AU 9923867	A1	19991125	AU 1999-23867	19990421
	JP 2000312586	A2	20001114	JP 1999-121955	19990428
	CN 1236010	A	19991124	CN 1999-105300	19990430
	BR 9902056	A	20000509	BR 1999-2056	19990430

=> d 2 av

=> d 2 ab

L4 ANSWER 2 OF 2 AGRICOLA

DUPLICATE 1

AB In plant and **algal** cells, inhibition of the enzyme protoporphyrinogen oxidase (Protox) by the N-phenyl heterocyclic **herbicide** S-23142 causes massive **protoporphyrin IX** accumulation, resulting in membrane deterioration and cell lethality in the light. We have identified a 40.4 kb genomic fragment encoding S-23142 **resistance** by using transformation to screen an indexed cosmid library made from nuclear DNA of the dominant rs-3 mutant of

Chlamydomonas

reinhardtii. A 10.0 kb HindIII subclone (Hind 10) of this insert yields a high frequency of **herbicide-resistant** transformants, consistent with frequent non-homologous integration of the complete RS-3 gene. A 3.4 kb XhoI subfragment (Xho3.4) yields rare **herbicide-resistant** transformants, suggestive of homologous integration of a portion of the coding sequence containing the mutation. Molecular and genetic analysis of the transformants localized the rs-3 mutation conferring S-23142 **resistance** to the Xho3.4 fragment, which was found to contain five putative exons encoding a protein with identity to the C-terminus of the Arabidopsis Protox enzyme. A cDNA clone containing

a

1698 bp ORF that encodes a 563 amino acid peptide with 51% and 53% identity to Arabidopsis and tobacco Protox I, respectively, was isolated from a wild-type C. reinhardtii library. Comparison of the wild-type cDNA sequence with the putative exon sequences present in the mutant Xho3.4 fragment revealed a G leads to A change at 291 in the first putative

exon,

resulting in a Val leads to Met substitution at a conserved position equivalent to Val-389 of the wild-type C. reinhardtii cDNA. A sequence comparison of genomic Hind10 fragments from C. reinhardtii rs-3 and its wild-type progenitor CC-407 showed this G leads to A change at the equivalent position (5751) within exon 10.

=> d 2 so

L4 ANSWER 2 OF 2 AGRICOLA

DUPLICATE 1

SO Plant molecular biology, Nov 1998. Vol. 38, No. 5. p. 839-859
Publisher: Dordrecht : Kluwer Academic Publishers.
CODEN: PMBIDB; ISSN: 0167-4412

=> s 12 and (arabidopsis or maize)

L5 10 L2 AND (ARABIDOPSIS OR MAIZE)

=> dup rem 15

PROCESSING COMPLETED FOR L5

L6 6 DUP REM L5 (4 DUPLICATES REMOVED)

=> d 1-6 ti

L6 ANSWER 1 OF 6 CAPLUS COPYRIGHT 2001 ACS

TI Construction of chimeric gene containing **Arabidopsis thaliana** plastid clpP and psbB gene promoters linked to genes (**PPO**, hemG or hemY) encoding **resistance** to herbicides, and their use in transforming plants

L6 ANSWER 2 OF 6 CAPLUS COPYRIGHT 2001 ACS
 TI **Herbicide-resistant** transgenic plants having
 protoporphyrinogen IX oxidase inhibitor binding activity, and use in weed
 control

L6 ANSWER 3 OF 6 CAPLUS COPYRIGHT 2001 ACS
 TI **Herbicide-resistant** transgenic plants having
 protoporphyrinogen IX oxidase activity, production and screening of the
 transgenic plants, and weed control

L6 ANSWER 4 OF 6 AGRICOLA DUPLICATE 1
 TI Overexpression of plastidic protoporphyrinogen IX oxidase leads to
resistance to the diphenyl-ether **herbicide** acifluorfen.

L6 ANSWER 5 OF 6 CAPLUS COPYRIGHT 2001 ACS
 TI Genetically transformed plants demonstrating **resistance** to
 porphyrinogen biosynthesis-inhibiting herbicides mediated by gene
 hemG-encoded protoporphyrinogen oxidase

L6 ANSWER 6 OF 6 AGRICOLA DUPLICATE 2
 TI Isolation and characterization of a mutant protoporphyrinogen oxidase
 gene
 from Chlamydomonas reinhardtii conferring **resistance** to
 porphyrin herbicides.

=> d pi

L6 ANSWER 1 OF 6 CAPLUS COPYRIGHT 2001 ACS
 PATENT NO. KIND DATE APPLICATION NO. DATE

 PI WO 2001007590 A2 20010201 WO 2000-EP7118 20000725
 W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
 CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR,
 HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT,
 LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU,
 SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN,
 YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
 DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ,
 CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

=> d 2 pi

L6 ANSWER 2 OF 6 CAPLUS COPYRIGHT 2001 ACS
 PATENT NO. KIND DATE APPLICATION NO. DATE

 PI JP 2001190168 A2 20010717 JP 2000-328811 20001027

=> d 3 pi

L6 ANSWER 3 OF 6 CAPLUS COPYRIGHT 2001 ACS
 PATENT NO. KIND DATE APPLICATION NO. DATE

 PI JP 2001120092 A2 20010508 JP 1999-310245 19991029

=> d 4 so

L6 ANSWER 4 OF 6 AGRICOLA DUPLICATE 1
SO Plant physiology, Jan 2000. Vol. 122, No. 1. p. 75-83
Publisher: Rockville, MD : American Society of Plant Physiologists, 1926-
CODEN: PLPHAY; ISSN: 0032-0889

=> d 4 ab

L6 ANSWER 4 OF 6 AGRICOLA DUPLICATE 1
AB The use of herbicides to control undesirable vegetation has become a universal practice. For the broad application of herbicides the risk of damage to crop plants has to be limited. We introduced a gene into the genome of tobacco (*Nicotiana tabacum*) plants encoding the plastid-located protoporphyrinogen oxidase of **Arabidopsis**, the last enzyme of the common tetrapyrrole biosynthetic pathway, under the control of the cauliflower mosaic virus 35S promoter. The transformants were screened for low **protoporphyrin IX** accumulation upon treatment with the diphenyl ether-type **herbicide** acifluorfen. Leaf disc incubation and foliar spraying with acifluorfen indicated the lower susceptibility of the transformants against the **herbicide**. The **resistance** to acifluorfen is conferred by overexpression of the plastidic isoform of protoporphyrinogen oxidase. The in vitro activity of this enzyme extracted from plastids of selected transgenic lines was at least five times higher than the control activity. **Herbicide** treatment that is normally inhibitory to protoporphyrinogen IX oxidase did not significantly impair the catalytic reaction in transgenic plants and, therefore, did not cause photodynamic damage in leaves. Therefore, overproduction of protoporphyrinogen oxidase neutralizes the herbicidal action, prevents the accumulation of the substrate protoporphyrinogen IX, and consequently abolishes the light-dependent phytotoxicity of acifluorfen.

=> s 12 and transgenic

L7 11 L2 AND TRANSGENIC

=> dup rem 17

PROCESSING COMPLETED FOR L7

L8 8 DUP REM L7 (3 DUPLICATES REMOVED)

=> d 1-8 ti

L8 ANSWER 1 OF 8 CAPLUS COPYRIGHT 2001 ACS
TI Plant S-adenosylmethionin:Mg **protoporphyrin IX-O-**
methyltransferase and cDNA and **transgenic** plants with altered
chlorophyll content and/or **herbicide tolerance**

L8 ANSWER 2 OF 8 CAPLUS COPYRIGHT 2001 ACS
TI **Herbicide-resistant transgenic** plants having
protoporphyrinogen IX oxidase inhibitor binding activity, and use in weed
control

L8 ANSWER 3 OF 8 CAPLUS COPYRIGHT 2001 ACS
TI **Herbicide-resistant transgenic** plants having
protoporphyrinogen IX oxidase activity, production and screening of the
transgenic plants, and weed control

L8 ANSWER 4 OF 8 CAPLUS COPYRIGHT 2001 ACS
TI Method of controlling weeds in **transgenic** crops

L8 ANSWER 5 OF 8 AGRICOLA DUPLICATE 1
 TI Overexpression of plastidic protoporphyrinogen IX oxidase leads to **resistance** to the diphenyl-ether **herbicide** acifluorfen.

L8 ANSWER 6 OF 8 CAPLUS COPYRIGHT 2001 ACS
 TI **Transgenic** plants **tolerant** of herbicidal inhibitors of porphyrin biosynthesis

L8 ANSWER 7 OF 8 CAPLUS COPYRIGHT 2001 ACS DUPLICATE 2
 TI **Transgenic** plants containing the phosphinothricin-N-acetyltransferase gene metabolize the **herbicide** L-phosphinothricin (glufosinate) differently from untransformed plants

L8 ANSWER 8 OF 8 AGRICOLA
 TI **Transgenic** plants containing the phosphinothricin-N-acetyltransferase gene metabolize the **herbicide** L-phosphinothricin (glufosinate) differently from untransformed plants.

=> d so

L8 ANSWER 1 OF 8 CAPLUS COPYRIGHT 2001 ACS
 SO PCT Int. Appl., 70 pp.
 CODEN: PIXXD2

=> d pi

L8 ANSWER 1 OF 8 CAPLUS COPYRIGHT 2001 ACS

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001009355	A2	20010208	WO 2000-EP7472	20000802
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				

=> d 2 pi

L8 ANSWER 2 OF 8 CAPLUS COPYRIGHT 2001 ACS

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001190168	A2	20010717	JP 2000-328811	20001027

=> d 3 pi

L8 ANSWER 3 OF 8 CAPLUS COPYRIGHT 2001 ACS

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001120092	A2	20010508	JP 1999-310245	19991029

=> d 4 pi

L8 ANSWER 4 OF 8 CAPLUS COPYRIGHT 2001 ACS
PATENT NO. KIND DATE APPLICATION NO. DATE

PI WO 2000074488 A1 20001214 WO 2000-EP5782 20000530
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR,
CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU,
ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU,
LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE,
SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA,
ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ,
CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

=> d 6 pi

L8 ANSWER 6 OF 8 CAPLUS COPYRIGHT 2001 ACS
PATENT NO. KIND DATE APPLICATION NO. DATE

PI EP 953646 A2 19991103 EP 1999-108463 19990430
EP 953646 A3 20000906
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO
AU 9923867 A1 19991125 AU 1999-23867 19990421
JP 2000312586 A2 20001114 JP 1999-121955 19990428
CN 1236010 A 19991124 CN 1999-105300 19990430
BR 9902056 A 20000509 BR 1999-2056 19990430

=> d 8 ab

L8 ANSWER 8 OF 8 AGRICOLA
AB L-Phosphinothricin (L-Pt)-**resistant** plants were constructed by
introducing a modified phosphinothricin-N-acetyl-transferase gene (pat)
via Agrobacterium-mediated gene transfer into tobacco (Nicotiana tabacum
L), and via direct gene transfer into carrot (Daucus carota L). The
metabolism of L-Pt was studied in these **transgenic**, Pt-
resistant plants, as well as in the untransformed species. The
degradation of L-Pt, ¹⁴C-labeled specifically at different C-atoms, was
analysed by measuring the release of ¹⁴CO₂ and by separating the labeled
degradation products on thin-layer-chromatography plates. In
untransformed
tobacco and carrot plants, L-Pt was deaminated to form its corresponding
oxo acid 4-methylphosphinico-2-oxo-butanoic acid (**PPO**), which
subsequently was decarboxylated to form 3-methylphosphinico-propanoic
acid
(MPP). This compound was stable in plants. A third metabolite remained
unidentified. The L-Pt was rapidly N-acetylated in **herbicide-**
resistant tobacco and carrot plants, indicating that the
degradation pathway of L-Pt into **PPO** and MPP was blocked. The
N-acetylated product, L-N-acetyl-Pt remained stable with regard to
degradation, but was found to exist in a second modified form. In
addition, there was a pH-dependent, reversible change in the mobility of
L-N-acetyl-Pt thin-layer during chromatography.

=> dis his

(FILE 'HOME' ENTERED AT 16:22:22 ON 11 AUG 2001)

FILE 'AGRICOLA, CAPLUS, BIOSIS' ENTERED AT 16:22:50 ON 11 AUG 2001

L1 14352 S PROTOPORPHYRIN OR PPO
 L2 84 S L1 AND HERBICIDE AND (RESIST? OR TOLERA?)
 L3 4 S L2 AND ALGA?
 L4 2 DUP REM L3 (2 DUPLICATES REMOVED)
 L5 10 S L2 AND (ARABIDOPSIS OR MAIZE)
 L6 6 DUP REM L5 (4 DUPLICATES REMOVED)
 L7 11 S L2 AND TRANSGENIC
 L8 8 DUP REM L7 (3 DUPLICATES REMOVED)

=> s l2 and chlamydomonas

L9 8 L2 AND CHLAMYDOMONAS

=> dup rem l9

PROCESSING COMPLETED FOR L9

L10 6 DUP REM L9 (2 DUPLICATES REMOVED)

=> d 1-6 ti

L10 ANSWER 1 OF 6 CAPLUS COPYRIGHT 2001 ACS
 TI **Herbicide-resistant** transgenic plants having
 protoporphyrinogen IX oxidase inhibitor binding activity, and use in weed
 control

L10 ANSWER 2 OF 6 CAPLUS COPYRIGHT 2001 ACS
 TI Transgenic plants **tolerant** of herbicidal inhibitors of porphyrin
 biosynthesis

L10 ANSWER 3 OF 6 AGRICOLA DUPLICATE 1
 TI Isolation and characterization of a mutant protoporphyrinogen oxidase
 gene
 from **Chlamydomonas reinhardtii** conferring **resistance**
 to porphyric herbicides.

L10 ANSWER 4 OF 6 AGRICOLA
 TI Characterization of a mutant of **Chlamydomonas reinhardtii**
resistant to protoporphyrinogen oxidase inhibitors.

L10 ANSWER 5 OF 6 CAPLUS COPYRIGHT 2001 ACS
 TI Isolation and characterization of a **Chlamydomonas reinhardtii**
 mutant **resistant** to photobleaching herbicides

L10 ANSWER 6 OF 6 CAPLUS COPYRIGHT 2001 ACS
 TI Isolation and characterization of a **Chlamydomonas reinhardtii**
 mutant **resistant** to an experimental **herbicide** S-23142,
 which inhibits chlorophyll synthesis

=> d pi

	ANSWER 1 OF 6	CAPLUS	COPYRIGHT 2001	ACS
	PATENT NO.	KIND	DATE	APPLICATION NO. DATE
	-----	----	-----	-----
PI	JP 2001190168	A2	20010717	JP 2000-328811 20001027

=> d 2 pi

	ANSWER 2 OF 6	CAPLUS	COPYRIGHT 2001	ACS
	PATENT NO.	KIND	DATE	APPLICATION NO. DATE
	-----	----	-----	-----
PI	EP 953646	A2	19991103	EP 1999-108463 19990430

EP 953646 A3 20000906
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
 IE, SI, LT, LV, FI, RO
 AU 9923867 A1 19991125 AU 1999-23867 19990421
 JP 2000312586 A2 20001114 JP 1999-121955 19990428
 CN 1236010 A 19991124 CN 1999-105300 19990430
 BR 9902056 A 20000509 BR 1999-2056 19990430

=> d 3 so

L10 ANSWER 3 OF 6 AGRICOLA DUPLICATE 1
 SO Plant molecular biology, Nov 1998. Vol. 38, No. 5. p. 839-859
 Publisher: Dordrecht : Kluwer Academic Publishers.
 CODEN: PMBIDB; ISSN: 0167-4412

=> d 4 so

L10 ANSWER 4 OF 6 AGRICOLA
 SO ACS symposium series, 1994. No. 559. p. 91-104
 Publisher: Washington, D.C. : American Chemical Society, 1974-
 CODEN: ACSMC8; ISSN: 0097-6156

=> d 4 ab

L10 ANSWER 4 OF 6 AGRICOLA
 AB A nuclear mutant of *Chlamydomonas reinhardtii* (rs-3) is **resistant** to several herbicides which inhibit the enzyme protoporphyrinogen oxidase (Protox) in plants, including S-23142 [N-(4-chloro-2-fluoro-5-propargyloxy)-phenyl-3,4, 5,6-tetrahydrophthalimide], acifluorfenethyl, oxyfluorfen, and oxadiazon. Protox enzyme activity in Percoll-purified chloroplast thylakoids from rs-3 is less sensitive to S-23142 than that from wild type, indicating that the rs-3 mutation either directly or indirectly confers **resistance** on the enzyme. Genetic analysis of rs-3 showed that **resistance** results from a single dominant nuclear mutation that maps to linkage group IX, 13.7 and 12.3 map units from sr-1 and pf-16 respectively. Efforts to identify the **resistance** gene from a cosmic library of rs-3 nuclear DNA by transformation have yielded one S-23142 **resistant** isolate from the cell wall-less arginine-requiring strain CC-425 (arg-2, cw-15). Since no isolates **resistant** to S-23142 were seen in control experiments, this suggests that the **resistant** isolate is a transformant and that the rs-3 gene can be isolated by screening individual cosmic clones by transformation.

=> d 4 au

L10 ANSWER 4 OF 6 AGRICOLA
 AU Sato, R.; Yamamoto, M.; Shibata, H.; Oshio, H.; Harris, E.H.; Gillham, N.W.; Boynton, J.E.

=> d 5 pi

L10 ANSWER 5 OF 6 CAPLUS COPYRIGHT 2001 ACS

=> d 5 so

L10 ANSWER 5 OF 6 CAPLUS COPYRIGHT 2001 ACS
SO Z. Naturforsch., C: Biosci. (1993), 48(3-4), 339-44
CODEN: ZNCBDA; ISSN: 0341-0382

=> d 5 ab

L10 ANSWER 5 OF 6 CAPLUS COPYRIGHT 2001 ACS

AB A review with 21 refs. of the mode of action of N-phenylimide photobleaching herbicides in comparison with di-Ph ether herbicides. These N-phenylimide herbicides as well as di-Ph ether herbicides induce **protoporphyrin IX** accumulation and inhibit protoporphyrinogen oxidase activity at extremely low concns. in higher plants. The binding of a ¹⁴C-labeled N-phenylimide **herbicide** S-23121 [N-[4-chloro-2-fluoro-5-[(1-methyl-2-propynyl)oxy]phenyl]-3,4,5,6-tetrahydrophthalimide] to the solubilized plastid fractions of greening corn seedlings is competed by the di-Ph ether **herbicide** acifluorfen-Et, but not by diuron, an inhibitor of photosynthetic electron transport. These results indicate a similar mode of action for both N-phenylimide and di-Ph ether herbicides. In order to investigate the mechanism of photobleaching herbicides at the mol. level, a strain of **Chlamydomonas reinhardtii** RS-3 **resistant** to N-phenylimide S-23142 [N-(4-chloro-2-fluoro-5-propargyloxyphenyl)-3,4,5,6-tetrahydrophthalimide] was isolated by mutagenesis with N-methyl-N'-nitro-N-nitrosoguanidine. The 90% inhibition concn. of N-phenylimide S-23142 for growth of RS-3 was 100 times higher than that for wild type. Max. accumulation of **protoporphyrin IX** was reached at 0.03 μ M of S-23142 for the wild type and 3 μ M for RS-3. RS-3 was **resistant** to oxadiazon, oxyfluorfen and acifluorfen-Et which had been shown to have the same mechanism of action as N-phenylimide herbicides, but not to paraquat, diuron or fluridone. Genetic anal. of RS-3 strain showed that the **resistance** results from a dominant mutation (rs-3) in the nuclear genome. The magnesium **protoporphyrin IX** synthesizing activity from 5-aminolevulinic acid in chloroplast fragments isolated from RS-3 was less sensitive to S-23142 than that from wild type (CC-407). Protoporphyrinogen oxidase activity in Percoll-purified chloroplasts from RS-3 was also less sensitive to S-23142 than that from wild type. Thus, the **resistance** of RS-3 is specific for photobleaching herbicides, and the mutation is related to protoporphyrinogen oxidase, the primary site of the photobleaching **herbicide** action.

=> d 6 pi

L10 ANSWER 6 OF 6 CAPLUS COPYRIGHT 2001 ACS

=> d 6 so

L10 ANSWER 6 OF 6 CAPLUS COPYRIGHT 2001 ACS

SO Res. Photosynth., Proc. Int. Congr. Photosynth., 9th (1992), Volume 3, 567-70. Editor(s): Murata, Norio. Publisher: Kluwer, Dordrecht, Neth.
CODEN: 59IZA5

=> d 6 ab

L10 ANSWER 6 OF 6 CAPLUS COPYRIGHT 2001 ACS

AB A mutant of **Chlamydomonas reinhardtii** rs-3 was isolated from a wild type strain CC-407. The rs-3 mutant shows 100 fold **resistance** to an exptl. **herbicide** S-23142 [N-(4-chloro-2-fluoro-5-propargyloxy)-phenyl-3,4,5,6-tetrahydrophthalimide] which inhibits the protoporphyrinogen oxidase (Proto-ox) in the chlorophyll synthesis pathway and induces massive accumulation of porphyrins in cells. Repeated backcrosses of rs-3 to wild type stocks CC-124 and CC-125 yielded tetrads which segregated two **herbicide** sensitive and two **resistant** products, indicating that **resistance** results from a mutation in the nuclear genome. Synthesis of **protoporphyrin IX** from protoporphyrinogen in isolated chloroplast fragments from rs-3 is significantly less inhibited by S-23142 than in CC-407, indicating that the rs-3 mutation affects Proto-ox. Anal. of rs-3 arg-2/+ arg-7 diploids shows that the rs-3 mutation is dominant at the levels of both cell viability and Proto-ox enzyme **resistance**.

=> dis his

(FILE 'HOME' ENTERED AT 16:22:22 ON 11 AUG 2001)

FILE 'AGRICOLA, CAPLUS, BIOSIS' ENTERED AT 16:22:50 ON 11 AUG 2001

L1 14352 S PROTOPORPHYRIN OR PPO
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L4 2 DUP REM L3 (2 DUPLICATES REMOVED)
L5 10 S L2 AND (ARABIDOPSIS OR MAIZE)
L6 6 DUP REM L5 (4 DUPLICATES REMOVED)
L7 11 S L2 AND TRANSGENIC
L8 8 DUP REM L7 (3 DUPLICATES REMOVED)
L9 8 S L2 AND CHLAMYDOMONAS
L10 6 DUP REM L9 (2 DUPLICATES REMOVED)

=> s l2 and (gene or cdna or coding region)

L11 16 L2 AND (GENE OR CDNA OR CODING REGION)

=> dup rem l11

PROCESSING COMPLETED FOR L11

L12 11 DUP REM L11 (5 DUPLICATES REMOVED)

=> d 1-11 ti

L12 ANSWER 1 OF 11 CAPLUS COPYRIGHT 2001 ACS

TI Plant S-adenosylmethionin:Mg **protoporphyrin IX**-O-methyltransferase and **cdna** and transgenic plants with altered chlorophyll content and/or **herbicide tolerance**

L12 ANSWER 2 OF 11 CAPLUS COPYRIGHT 2001 ACS

TI Construction of chimeric **gene** containing Arabidopsis thaliana plastid clpP and psbB **gene** promoters linked to genes (**PPO**, hemG or hemY) encoding **resistance** to herbicides, and their use in transforming plants

L12 ANSWER 3 OF 11 CAPLUS COPYRIGHT 2001 ACS

TI **Herbicide-resistant** transgenic plants having

protoporphyrinogen IX oxidase inhibitor binding activity, and use in weed control

L12 ANSWER 4 OF 11 CAPLUS COPYRIGHT 2001 ACS
TI **Herbicide-resistant** transgenic plants having
protoporphyrinogen IX oxidase activity, production and screening of the
transgenic plants, and weed control

L12 ANSWER 5 OF 11 AGRICOLA DUPLICATE 1
TI Overexpression of plastidic protoporphyrinogen IX oxidase leads to
resistance to the diphenyl-ether **herbicide** acifluorfen.

L12 ANSWER 6 OF 11 CAPLUS COPYRIGHT 2001 ACS
TI Transgenic plants **tolerant** of herbicidal inhibitors of porphyrin
biosynthesis

L12 ANSWER 7 OF 11 CAPLUS COPYRIGHT 2001 ACS
TI Genetically transformed plants demonstrating **resistance** to
prophyrinogen biosynthesis-inhibiting herbicides mediated by **gene**
hemG-encoded protoporphyrinogen oxidase

L12 ANSWER 8 OF 11 AGRICOLA DUPLICATE 2
TI Isolation and characterization of a mutant protoporphyrinogen oxidase
gene from Chlamydomonas reinhardtii conferring **resistance**
to porphyrin herbicides.

L12 ANSWER 9 OF 11 AGRICOLA
TI Characterization of a mutant of Chlamydomonas reinhardtii
resistant to protoporphyrinogen oxidase inhibitors.

L12 ANSWER 10 OF 11 CAPLUS COPYRIGHT 2001 ACS DUPLICATE 3
TI Transgenic plants containing the phosphinothricin-N-acetyltransferase
gene metabolize the **herbicide** L-phosphinothricin
(glufosinate) differently from untransformed plants

L12 ANSWER 11 OF 11 AGRICOLA
TI Transgenic plants containing the phosphinothricin-N-acetyltransferase
gene metabolize the **herbicide** L-phosphinothricin
(glufosinate) differently from untransformed plants.

=> d pi

L12 ANSWER 1 OF 11 CAPLUS COPYRIGHT 2001 ACS

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001009355	A2	20010208	WO 2000-EP7472	20000802

PI

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR,
HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT,
LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU,
SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN,
YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ,
CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

=> d 5 so

L12 ANSWER 5 OF 11 AGRICOLA DUPLICATE 1
SO Plant physiology, Jan 2000. Vol. 122, No. 1. p. 75-83
Publisher: Rockville, MD : American Society of Plant Physiologists, 1926-
CODEN: PLPHAY; ISSN: 0032-0889

=> d 6 pi

L12 ANSWER 6 OF 11 CAPLUS COPYRIGHT 2001 ACS
PATENT NO. KIND DATE APPLICATION NO. DATE

PI EP 953646 A2 19991103 EP 1999-108463 19990430
EP 953646 A3 20000906
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO
AU 9923867 A1 19991125 AU 1999-23867 19990421
JP 2000312586 A2 20001114 JP 1999-121955 19990428
CN 1236010 A 19991124 CN 1999-105300 19990430
BR 9902056 A 20000509 BR 1999-2056 19990430

=> d 7 pi

L12 ANSWER 7 OF 11 CAPLUS COPYRIGHT 2001 ACS
PATENT NO. KIND DATE APPLICATION NO. DATE

PI WO 9833927 A1 19980806 WO 1998-US1622 19980129
W: AL, AM, AU, AZ, BA, BB, BG, BR, BY, CA, CN, CU, CZ, EE, GE, GW,
HU, ID, IL, IS, JP, KG, KP, KR, KZ, LC, LK, LR, LT, LV, MD, MG,
MK, MN, MX, NO, NZ, PL, RO, RU, SG, SI, SK, SL, TJ, TM, TR, TT,
UA, US, UZ, VN, YU, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI,
FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM,
GA, GN, ML, MR, NE, SN, TD, TG
AU 9860468 A1 19980825 AU 1998-60468 19980129
EP 970229 A1 20000112 EP 1998-903792 19980129
R: CH, DE, FR, GB, LI

=> d 9 pi

'PI' IS NOT A VALID FORMAT

In a multifile environment, a format can only be used if it is valid
in at least one of the files. Refer to file specific help messages
or the STNGUIDE file for information on formats available in
individual files.

REENTER DISPLAY FORMAT FOR ALL FILES (FILEDEFAULT):so

L12 ANSWER 9 OF 11 AGRICOLA
SO ACS symposium series, 1994. No. 559. p. 91-104
Publisher: Washington, D.C. : American Chemical Society, 1974-
CODEN: ACSMC8; ISSN: 0097-6156

=> s 9 ab

L13 29 9 AB

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<-----User Break----->

=> del 113 y

=> d 9 ab

L12 ANSWER 9 OF 11 AGRICOLA
AB A nuclear mutant of Chlamydomonas reinhardtii (rs-3) is **resistant** to several herbicides which inhibit the enzyme protoporphyrinogen oxidase (Protox) in plants, including S-23142 [N-(4-chloro-2-fluoro-5-propargyloxy)-phenyl-3,4, 5,6-tetrahydrophthalimide], acifluorfenethyl, oxyfluorfen, and oxadiazon. Protox enzyme activity in Percoll-purified chloroplast thylakoids from rs-3 is less sensitive to S-23142 than that from wild type, indicating that the rs-3 mutation either directly or indirectly confers **resistance** on the enzyme. Genetic analysis of rs-3 showed that **resistance** results from a single dominant nuclear mutation that maps to linkage group IX, 13.7 and 12.3 map units from sr-1 and pf-16 respectively. Efforts to identify the **resistance gene** from a cosmic library of rs-3 nuclear DNA by transformation have yielded one S-23142 **resistant** isolate from the cell wall-less arginine-requiring strain CC-425 (arg-2, cw-15). Since no isolates **resistant** to S-23142 were seen in control experiments, this suggests that the **resistant** isolate is a transformant and that the rs-3 **gene** can be isolated by screening individual cosmic clones by transformation.

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(FILE 'HOME' ENTERED AT 16:22:22 ON 11 AUG 2001)

FILE 'AGRICOLA, CAPLUS, BIOSIS' ENTERED AT 16:22:50 ON 11 AUG 2001

L1 14352 S PROTOPORPHYRIN OR PPO
L2 84 S L1 AND HERBICIDE AND (RESIST? OR TOLERA?)
L3 4 S L2 AND ALGA?
L4 2 DUP REM L3 (2 DUPLICATES REMOVED)
L5 10 S L2 AND (ARABIDOPSIS OR MAIZE)
L6 6 DUP REM L5 (4 DUPLICATES REMOVED)
L7 11 S L2 AND TRANSGENIC
L8 8 DUP REM L7 (3 DUPLICATES REMOVED)
L9 8 S L2 AND CHLAMYDOMONAS
L10 6 DUP REM L9 (2 DUPLICATES REMOVED)
L11 16 S L2 AND (GENE OR CDNA OR CODING REGION)
L12 11 DUP REM L11 (5 DUPLICATES REMOVED)